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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/863,013

05/22/2001

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04/23/2003

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EXAMINER

VY, HUNG T.

ART UNIT

PAPER NUMBER

2828

DATE MAILED: 04/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/863,013

Applicant(s)

KOKTA ET AL.

Examiner

Hung T Vy

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 and 47 is/are pending in the application.
- 4a) Of the above claim(s) 33-46 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-32 and 47 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.



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Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 8.

- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

1. In response to the amendment filed on dated 02/03/2003, claims 1-47 are pending in this application.

Election/Restrictions

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:

Group I. Claims 1-32 and 47, drawn to a saturable absorber Q-switch and a laser system, classified in class 372, subclass 10.

Group II. Claims 33-46, drawn to a method of forming a monocrystalline lattice of a saturable absorber Q-switch, classified in class 438, and subclass 166.

3. During a telephone conversation with Attorney Theresa A. Devlin on 03/21/2003, a provisional election was made **without** traverse to prosecute the invention of Group I, claims 1-32 and 47. Affirmation of this election of claims must be made by applicant in replying to this Office action.

Claims 33-46 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. **(NOTE: FOR TWO OR MORE APPLICANTS)** Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of

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inventorship must be accompanied by a diligently filed petition under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(h).

Claim Rejections - 35 USC § 112

5. Claims 1- 32 and 47 are rejected under 35 U.S.C. 112, first paragraph.

Regarding claims 1, 16, and 47 the phrase "formula $Mg_{1-x}Co_xAl_yO_z$ " renders the claim indefinite because it is unclear because on claims recite the formula. It is mathematic algorithms. The claims recite only molar of compound. The claims fail to define the chemical limitation. It is not clear as how the formula of a silver halide color active material is being used for a saturable absorber Q-switch. Further, the claims fails to recite the structure limitation in order to form absorber Q-switch.

Base on the reject 112, the claims have been examined.

Claim Rejections - 35 U.S.C. § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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7. Claims 1-15 and 47 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Konstantin V. Yumashev, Applied Optics, vol. 38. No. 30 in view of Thony et al., U.S. patent No. 6,023,479.

Regarding claims 1-3,7 and 47, Konstantin v. Yumashev discloses a saturable absorber Q-switch, comprising a monocrystalline lattice having a formula $Mg_{1-x}Co_xAl_yO_z$ where x, y, z are still the range of the invention (See on the right column, first paragraph, page 1). Lattice has tetrahedral and octahedral positions, and wherein most of the magnesium and cobalt occupy tetrahedral positions (See the right column, the first paragraph on page 1). It really have the unit cell dimension is between about 7.97 Å and about 8.083 Å, cobalt is present in the monocrystalline lattice in an amount between about 0.02 atomic weight percent and about 0.043 weight percent and a monocrystalline lattice of cobalt-doped spinel because a saturable absorber Q-switch have the same structure and the same formula as $Co^{+2}:MgAl_2O_4$, but Konstantin v. Yumashev does not disclose y is greater than 2 and less than about 8. However, Thony et al. disclose element Al has y is greater than 2 and less than about 8 (See column 2, line 38-45).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify Konstantin v. Yumashev to have y is greater than 2 and less than about 8 as taught by Thony et al. because those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of the invention.

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Regarding claims 4-6, Konstantin v. Yamashev discloses the saturable absorber Q-switch, wherein Z is about 4-10 and Y is about 4-6 with different element (See left column, first paragraph and page1).

Regarding claims 8-15, Konstantin V. Yamashev discloses the saturable absorber Q-switch, having an absorption band of between about 1.34 μ m and 1.54 μ m (see left column, first paragraph, page 3).

8. Claims 16-32 are rejected under 35 U.S.C. 103 (a) as being unpatentable over Stultz et al., U.S. patent No. 5,654,973 in view of Konstantin V. Yumashev, Applied Optics, Vol. 38, No. 30 and Thony et al, U.S. patent No. 6,023,479.

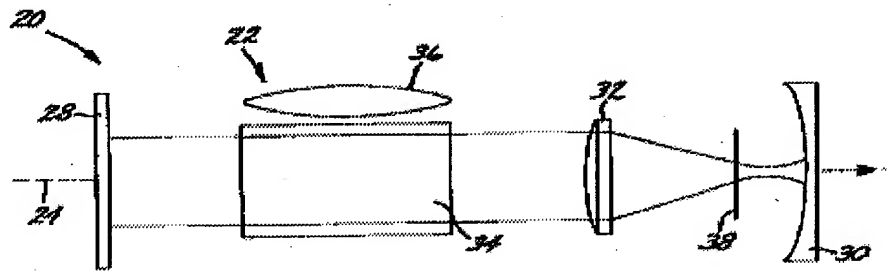
Regarding claim 16, Stultz et al. disclose a laser system, comprising:

a). a laser resonator cavity defined by a flat mirror (28) and an out coupler mirror (30), flat mirror (28) and said outcoupler (30) mirror oriented to form an optical resonant axis (24);

b). a lasing element (34) within the laser resonator cavity;

c) Optical pumping (36) means proximate to said lasing element

d). A saturable absorber Q-switch (38) lying along the resonant axis. (See Fig 1 below and column 3, line 14-21).

**FIG. 1**

But Stultz et al. do not disclose the Q-switch including a monocrystalline lattice having a formula $Mg_{1-x}Co_xAl_yO_z$. However, Konstantin v. Yumashev and Thony et al. disclose a monocrystalline lattice having a formula $Mg_{1-x}Co_xAl_yO_z$ where x, y, z are still the range of the invention (See on the right column, first paragraph, page 1 of Konstantin v. Yumashev and column 2, line 38-47 in Thony et al.).

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify to have a formula $Mg_{1-x}Co_xAl_yO_z$ because those skilled in the art will recognize that such modification and variations can be made without departing from the spirit of the invention.

It would have been obvious to provide Stultz et al. with the limitations as taught or suggested by Konstantin v. Yumashev and Thony et al.

Regarding claims 17, 27 and 31 Konstantin v. Yumashev discloses lattice has tetrahedral and octahedral positions, and wherein most of the magnesium and cobalt occupy tetrahedral positions (See the right column, the first paragraph on page 1). It really have the unit cell dimension is between about 7.97 \AA and about 8.083 \AA and cobalt is present in the monocrystalline lattice in an amount between about 0.02 atomic

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weight percent and about 0.043 weight percent because a saturable absorber Q-switch have the same structure and the same formula as $\text{Co}^{+2}:\text{MgAl}_2\text{O}_4$.

Regarding claim 18-26, Stultz et al. disclose the lasing element is an $\text{Er}:\text{Yb}:\text{glass}$ ($\text{Er}^{3+}:\text{glass?}$) and $\text{Nd}^{+3}:\text{YAlO}_3$ lasing element (See column 3, line 28-34) (or see in Konstantin v. Yamashev at page 1, left column and first paragraph) and the saturable absorber Q-switch has an absorption band of about .95 to about 1.65 micrometers (See column 3, line 51-52).

Regarding claims 28-30, Konstantin v. Yamashev discloses the saturable absorber Q-switch, wherein Z is about 4-10 and Y is about 4-6 with different element (See left column, first paragraph and page1).

Regarding claim 32, Konstantin v. Yamashev discloses the saturable absorber Q-switch has a decay time greater than about $30 \cdot 10^{-6}$ seconds (See fig 3).

Conclusion

9. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist the examiner to locate the appropriate paragraphs.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung VY whose telephone number is (703) 605-0759. The examiner can normally be reached on Monday-Friday 8:30 am - 5:30pm. If attempts to reach the examiner by telephone are unsuccessful, the examiner's

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supervisor, Paul IP can be reached on (703) 308-3098. The fax numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



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April 16, 2003